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Sequence Listing was accepted.
If you need help call the Patent Electronic Business Center at (866)
217-9197 (toll free).
Reviewer: Durreshwar Anjum
Timestamp: [year=2007; month=12; day=13; hr=15; min=10; sec=57; ms=260;
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Application No: 10813507   Version No: 3.0

Input Set:

Output Set:

Started: 2007-11-28 16:45:33.651

Finished: 2007-11-28 16:45:37.845

Elapsed: 0 hr(s) 0 min(s) 4 sec(s) 194 ms

Total Warnings: 9

Total Errors: 0

No. of SeqIDs Defined: 21

Actual SeqID Count: 21

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W 213	Artificial or Unknown found in <213> in SEQ ID (14)
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<110> Lollar, John S.

<120> Nucleic Acid and Amino Acid Sequences
   encoding High-Level Expressor Factor VIII Polypeptides and
   Methods of Use

<130> 007157/ 276516

<140> 10813507
<141> 2004-03-30

<150> PCT/US02/33403
<151> 2002-10-07

<150> 60/327,388
<151> 2001-10-05

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<221> gene
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<223> Factor VIII-- Full Length

<221> CDS
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 1   5   10   15

ggc ttt agt gcc atc agg aga tac tac ctg ggc gca gtg gaa ctg tcc   96
Gly Phe Ser Ala Ile Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser
            20   25   30

tgg gac tac cgg caa agt gaa ctc ctc cgt gag ctg cac gtg gac acc   144
Trp Asp Tyr Arg Gln Ser Glu Leu Leu Arg Glu Leu His Val Asp Thr
        35   40   45

aga ttt cct gct aca gcg cca gga gct ctt ccg ttg ggc ccg tca gtc   192
Arg Phe Pro Ala Thr Ala Pro Gly Ala Leu Pro Leu Gly Pro Ser Val
    50   55   60

ctg tac aaa aag act gtg ttc gta gag ttc acg gat caa ctt ttc agc   240
Leu Tyr Lys Lys Thr Val Phe Val Glu Phe Thr Asp Gln Leu Phe Ser
 65   70   75   80

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gtt gcc agg ccc agg cca cca tgg atg ggt ctg ctg ggt cct acc atc       288
Val Ala Arg Pro Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile
            85              90                  95


cag gct gag gtt tac gac acg gtg gtc gtt acc ctg aag aac atg gct       336
Gln Ala Glu Val Tyr Asp Thr Val Val Val Thr Leu Lys Asn Met Ala
            100             105             110


tct cat ccc gtt agt ctt cac gct gtc ggc gtc tcc ttc tgg aaa tct       384
Ser His Pro Val Ser Leu His Ala Val Gly Val Ser Phe Trp Lys Ser
        115             120             125


tcc gaa ggc gct gaa tat gag gat cac acc agc caa agg gag aag gaa       432
Ser Glu Gly Ala Glu Tyr Glu Asp His Thr Ser Gln Arg Glu Lys Glu
    130             135             140


gac gat aaa gtc ctt ccc ggt aaa agc caa acc tac gtc tgg cag gtc       480
Asp Asp Lys Val Leu Pro Gly Lys Ser Gln Thr Tyr Val Trp Gln Val
145             150             155             160


ctg aaa gaa aat ggt cca aca gcc tct gac cca cca tgt ctc acc tac       528
Leu Lys Glu Asn Gly Pro Thr Ala Ser Asp Pro Pro Cys Leu Thr Tyr
                165             170             175


tca tac ctg tct cac gtg gac ctg gtg aaa gac ctg aat tcg ggc ctc       576
Ser Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu
            180             185             190


att gga gcc ctg ctg gtt tgt aga gaa ggg agt ctg acc aga gaa agg       624
Ile Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu Thr Arg Glu Arg
        195             200             205


acc cag aac ctg cac gaa ttt gta cta ctt ttt gct gtc ttt gat gaa       672
Thr Gln Asn Leu His Glu Phe Val Leu Leu Phe Ala Val Phe Asp Glu
    210             215             220


ggg aaa agt tgg cac tca gca aga aat gac tcc tgg aca cgg gcc atg       720
Gly Lys Ser Trp His Ser Ala Arg Asn Asp Ser Trp Thr Arg Ala Met
225             230             235             240


gat ccc gca cct gcc agg gcc cag cct gca atg cac aca gtc aat ggc       768
Asp Pro Ala Pro Ala Arg Ala Gln Pro Ala Met His Thr Val Asn Gly
            245             250             255


tat gtc aac agg tct ctg cca ggt ctg atc gga tgt cat aag aaa tca       816
Tyr Val Asn Arg Ser Leu Pro Gly Leu Ile Gly Cys His Lys Lys Ser
            260             265             270


gtc tac tgg cac gtg att gga atg ggc acc agc ccg gaa gtg cac tcc       864
Val Tyr Trp His Val Ile Gly Met Gly Thr Ser Pro Glu Val His Ser
            275             280             285


att ttt ctt gaa ggc cac acg ttt ctc gtg agg cac cat cgc cag gct       912
Ile Phe Leu Glu Gly His Thr Phe Leu Val Arg His His Arg Gln Ala
    290             295             300
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tcc ttg gag atc tcg cca cta act ttc ctc act gct cag aca ttc ctg    960
Ser Leu Glu Ile Ser Pro Leu Thr Phe Leu Thr Ala Gln Thr Phe Leu
305             310             315             320

atg gac ctt ggc cag ttc cta ctg ttt tgt cat atc tct tcc cac cac   1008
Met Asp Leu Gly Gln Phe Leu Leu Phe Cys His Ile Ser Ser His His
                325             330             335

cat ggt ggc atg gag gct cac gtc aga gta gaa agc tgc gcc gag gag   1056
His Gly Gly Met Glu Ala His Val Arg Val Glu Ser Cys Ala Glu Glu
            340             345             350

ccc cag ctg cgg agg aaa gct gat gaa gag gaa gat tat gat gac aat   1104
Pro Gln Leu Arg Arg Lys Ala Asp Glu Glu Glu Asp Tyr Asp Asp Asn
            355             360             365

ttg tac gac tcg gac atg gac gtg gtc cgg ctc gat ggt gac gac gtg   1152
Leu Tyr Asp Ser Asp Met Asp Val Val Arg Leu Asp Gly Asp Asp Val
        370             375             380

tct ccc ttt atc caa atc cgc tcg gtt gcc aag aag cat ccc aaa acc   1200
Ser Pro Phe Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr
385             390             395             400

tgg gtg cac tac atc tct gca gag gag gag gac tgg gac tac gcc ccc   1248
Trp Val His Tyr Ile Ser Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro
                405             410             415

gcg gtc ccc agc ccc agt gac aga agt tat aaa agt ctc tac ttg aac   1296
Ala Val Pro Ser Pro Ser Asp Arg Ser Tyr Lys Ser Leu Tyr Leu Asn
            420             425             430

agt ggt cct cag cga att ggt agg aaa tac aaa aaa gct cga ttc gtc   1344
Ser Gly Pro Gln Arg Ile Gly Arg Lys Tyr Lys Lys Ala Arg Phe Val
            435             440             445

gct tac acg gat gta aca ttt aag act cgt aaa gct att ccg tat gaa   1392
Ala Tyr Thr Asp Val Thr Phe Lys Thr Arg Lys Ala Ile Pro Tyr Glu
        450             455             460

tca gga atc ctg gga cct tta ctt tat gga gaa gtt gga gac aca ctt   1440
Ser Gly Ile Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu
465             470             475             480

ttg att ata ttt aag aat aaa gcg agc cga cca tat aac atc tac cct   1488
Leu Ile Ile Phe Lys Asn Lys Ala Ser Arg Pro Tyr Asn Ile Tyr Pro
                485             490             495

cat gga atc act gat gtc agc gct ttg cac cca ggg aga ctt cta aaa   1536
His Gly Ile Thr Asp Val Ser Ala Leu His Pro Gly Arg Leu Leu Lys
            500             505             510

ggt tgg aaa cat ttg aaa gac atg cca att ctg cca gga gag act ttc   1584
Gly Trp Lys His Leu Lys Asp Met Pro Ile Leu Pro Gly Glu Thr Phe
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aag tat aaa tgg aca gtg act gtg gaa gat ggg cca acc aag tcc gat   1632
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Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp
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cct cgg tgc ctg acc cgc tac tac tcg agc tcc att aat cta gag aaa    1680
Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Ser Ile Asn Leu Glu Lys
545                 550                 555                 560


gat ctg gct tcg gga ctc att ggc cct ctc ctc atc tgc tac aaa gaa    1728
Asp Leu Ala Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu
                    565                 570                 575


tct gta gac caa aga gga aac cag atg atg tca gac aag aga aac gtc    1776
Ser Val Asp Gln Arg Gly Asn Gln Met Met Ser Asp Lys Arg Asn Val
                580                 585                 590


atc ctg ttt tct gta ttc gat gag aat caa agc tgg tac ctc gca gag    1824
Ile Leu Phe Ser Val Phe Asp Glu Asn Gln Ser Trp Tyr Leu Ala Glu
            595                 600                 605


aat att cag cgc ttc ctc ccc aat ccg gat gga tta cag ccc cag gat    1872
Asn Ile Gln Arg Phe Leu Pro Asn Pro Asp Gly Leu Gln Pro Gln Asp
        610                 615                 620


cca gag ttc caa gct tct aac atc atg cac agc atc aat ggc tat gtt    1920
Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val
625                 630                 635                 640


ttt gat agc ttg cag ctg tcg gtt tgt ttg cac gag gtg gca tac tgg    1968
Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp
                    645                 650                 655


tac att cta agt gtt gga gca cag acg gac ttc ctc tcc gtc ttc ttc    2016
Tyr Ile Leu Ser Val Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe
                660                 665                 670


tct ggc tac acc ttc aaa cac aaa atg gtc tat gaa gac aca ctc acc    2064
Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr
            675                 680                 685


ctg ttc ccc ttc tca gga gaa acg gtc ttc atg tca atg gaa aac cca    2112
Leu Phe Pro Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro
        690                 695                 700


ggt ctc tgg gtc cta ggg tgc cac aac tca gac ttg cgg aac aga ggg    2160
Gly Leu Trp Val Leu Gly Cys His Asn Ser Asp Leu Arg Asn Arg Gly
705                 710                 715                 720


atg aca gcc tta ctg aag gtg tat agt tgt gac agg gac att ggt gat    2208
Met Thr Ala Leu Leu Lys Val Tyr Ser Cys Asp Arg Asp Ile Gly Asp
                    725                 730                 735


tat tat gac aac act tat gaa gat att cca ggc ttc ttg ctg agt gga    2256
Tyr Tyr Asp Asn Thr Tyr Glu Asp Ile Pro Gly Phe Leu Leu Ser Gly
                740                 745                 750


aag aat gtc att gaa ccc aga agc ttt gcc cag aat tca aga ccc cct    2304
Lys Asn Val Ile Glu Pro Arg Ser Phe Ala Gln Asn Ser Arg Pro Pro
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agt gcg agc caa aag caa ttc caa acc atc aca agt cca gaa gat gac   2352
Ser Ala Ser Gln Lys Gln Phe Gln Thr Ile Thr Ser Pro Glu Asp Asp
    770   775   780

gtg gag ctt gac ccg cag tct gga gag aga acc caa gca ctg gaa gaa   2400
Val Glu Leu Asp Pro Gln Ser Gly Glu Arg Thr Gln Ala Leu Glu Glu
785   790   795   800

cta agt gtc ccc tct ggt gat ggg tcg atg ctc ttg gga cag aat cct   2448
Leu Ser Val Pro Ser Gly Asp Gly Ser Met Leu Leu Gly Gln Asn Pro
                   805   810   815

gct cca cat ggc tca tcc tca tct gat ctt caa gaa gcc agg aat gag   2496
Ala Pro His Gly Ser Ser Ser Ser Asp Leu Gln Glu Ala Arg Asn Glu
               820   825   830

gct gat gat tat tta cct gga gca aga gaa aga ggc acg gcc cca tcc   2544
Ala Asp Asp Tyr Leu Pro Gly Ala Arg Glu Arg Gly Thr Ala Pro Ser
           835   840   845

gca gcg gca cgt ctc aga cca gag ctg cat cac agt gcc gaa aga gta   2592
Ala Ala Ala Arg Leu Arg Pro Glu Leu His His Ser Ala Glu Arg Val
    850   855   860

ctt act cct gag cca gag aaa gag ttg aag aaa ctt gat tca aaa atg   2640
Leu Thr Pro Glu Pro Glu Lys Glu Leu Lys Lys Leu Asp Ser Lys Met
865   870   875   880

tct agt tca tca gac ctt cta aag act tcg cca aca att cca tca gac   2688
Ser Ser Ser Ser Asp Leu Leu Lys Thr Ser Pro Thr Ile Pro Ser Asp
                   885   890   895

acg ttg tca gcg gag act gaa agg aca cat tcc tta ggc ccc cca cac   2736
Thr Leu Ser Ala Glu Thr Glu Arg Thr His Ser Leu Gly Pro Pro His
               900   905   910

ccg cag gtt aat ttc agg agt caa tta ggt gcc att gta ctt ggc aaa   2784
Pro Gln Val Asn Phe Arg Ser Gln Leu Gly Ala Ile Val Leu Gly Lys
           915   920   925

aat tca tct cac ttt att ggg gct ggt gtc cct ttg ggc tcg act gag   2832
Asn Ser Ser His Phe Ile Gly Ala Gly Val Pro Leu Gly Ser Thr Glu
    930   935   940

gag gat cat gaa agc tcc ctg gga gaa aat gta tca cca gtg gag agt   2880
Glu Asp His Glu Ser Ser Leu Gly Glu Asn Val Ser Pro Val Glu Ser
945   950   955   960

gac ggg ata ttt gaa aag gaa aga gct cat gga cct gct tca ctg acc   2928
Asp Gly Ile Phe Glu Lys Glu Arg Ala His Gly Pro Ala Ser Leu Thr
                   965   970   975

aaa gac gat gtt tta ttt aaa gtt aat atc tct ttg gta aag aca aac   2976
Lys Asp Asp Val Leu Phe Lys Val Asn Ile Ser Leu Val Lys Thr Asn
               980   985   990

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aag gca cga gtt tac tta aaa act aat aga aag att cac att gat gac        3024
Lys Ala Arg Val Tyr Leu Lys Thr Asn Arg Lys Ile His Ile Asp Asp
        995                 1000                1005


gca gct tta tta act gag aat agg gca tct gca acg ttt atg gac aaa        3072
Ala Ala Leu Leu Thr Glu Asn Arg Ala Ser Ala Thr Phe Met Asp Lys
    1010                1015                1020


aat act aca gct tcg gga tta aat cat gtg tca aat tgg ata aaa ggg        3120
Asn Thr Thr Ala Ser Gly Leu Asn His Val Ser Asn Trp Ile Lys Gly
1025                1030                1035                1040


ccc ctt ggc aag aac ccc cta agc tcg gag cga ggc ccc agt cca gag        3168
Pro Leu Gly Lys Asn Pro Leu Ser Ser Glu Arg Gly Pro Ser Pro Glu
                1045                1050                1055


ctt ctg aca tct tca gga tca gga aaa tct gtg aaa ggt cag agt tct        3216
Leu Leu Thr Ser Ser Gly Ser Gly Lys Ser Val Lys Gly Gln Ser Ser
                1060                1065                1070


ggg cag ggg aga ata cgg gtg gca gtg gaa gag gaa gaa ctg agc aaa        3264
Gly Gln Gly Arg Ile Arg Val Ala Val Glu Glu Glu Glu Leu Ser Lys
            1075                1080                1085


ggc aaa gag atg atg ctt ccc aac agc gag ctc acc ttt ctc act aac        3312
Gly Lys Glu Met Met Leu Pro Asn Ser Glu Leu Thr Phe Leu Thr Asn
    1090                1095                1100


tcg gct gat gtc caa gga aac gat aca cac agt caa gga aaa aag tct        3360
Ser Ala Asp Val Gln Gly Asn Asp Thr His Ser Gln Gly Lys Lys Ser
1105                1110                1115                1120


cgg gaa gag atg gaa agg aga gaa aaa tta gtc caa gaa aaa gtc gac        3408
Arg Glu Glu Met Glu Arg Arg Glu Lys Leu Val Gln Glu Lys Val Asp
                1125                1130                1135


ttg cct cag gtg tat aca gcg act gga act aag aat ttc ctg aga aac        3456
Leu Pro Gln Val Tyr Thr Ala Thr Gly Thr Lys Asn Phe Leu Arg Asn
                1140                1145                1150


att ttt cac caa agc act gag ccc agt gta gaa ggg ttt gat ggg ggg        3504
Ile Phe His Gln Ser Thr Glu Pro Ser Val Glu Gly Phe Asp Gly Gly
            1155                1160                1165


tca cat gcg ccg gtg cct caa gac agc agg tca tta aat gat tcg gca        3552
Ser His Ala Pro Val Pro Gln Asp Ser Arg Ser Leu Asn Asp Ser Ala
        1170                1175                1180


gag aga gca gag act cac ata gcc cat ttc tca gca att agg gaa gag        3600
Glu Arg Ala Glu Thr His Ile Ala His Phe Ser Ala Ile Arg Glu Glu
1185                1190                1195                1200


gca ccc ttg gaa gcc ccg gga aat cga aca ggt cca ggt ccg agg agt        3648
Ala Pro Leu Glu Ala Pro Gly Asn Arg Thr Gly Pro Gly Pro Arg Ser
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gcg gtt ccc cgc cgc gtt aag cag agc ttg aaa cag atc aga ctc ccg     3696
Ala Val Pro Arg Arg Val Lys Gln Ser Leu Lys Gln Ile Arg Leu Pro
            1220             1225             1230

cta gaa gaa ata aag cct gaa agg ggg gtg gtt ctg aat gcc acc tca     3744
Leu Glu Glu Ile Lys Pro Glu Arg Gly Val Val Leu Asn Ala Thr Ser
        1235             1240             1245

acc cgg tgg tct gaa agc agt cct atc tta caa gga gcc aaa aga aat     3792
Thr Arg Trp Ser Glu Ser Ser Pro Ile Leu Gln Gly Ala Lys Arg Asn
    1250             1255             1260

aac ctt tct tta cct ttc ctg acc ttg gaa atg gcc gga ggt caa gga     3840
Asn Leu Ser Leu Pro Phe Leu Thr Leu Glu Met Ala Gly Gly Gln Gly
1265             1270             1275             1280

aag atc agc gcc ctg ggg aaa agt gcc gca ggc ccg ctg gcg tcc ggg     3888
Lys Ile Ser Ala Leu Gly Lys Ser Ala Ala Gly Pro Leu Ala Ser Gly
            1285             1290             1295

aag ctg gag aag gct gtt ctc tct tca gca ggc ttg tct gaa gca tct     3936
Lys Leu Glu Lys Ala Val Leu Ser Ser Ala Gly Leu Ser Glu Ala Ser
            1300             1305             1310

ggc aaa gct gag ttt ctt cct aaa gtt cga gtt cat cgg gaa gac ctg     3984
Gly Lys Ala Glu Phe Leu Pro Lys Val Arg Val His Arg Glu Asp Leu
        1315             1320             1325

ttg cct caa aaa acc agc aat gtt tct tgc gca cac ggg gat ctc ggc     4032
Leu Pro Gln Lys Thr Ser Asn Val Ser Cys Ala His Gly Asp Leu Gly
        1330             1335             1340

cag gag atc ttc ctg cag aaa aca cgg gga cct gtt aac ctg aac aaa     4080
Gln Glu Ile Phe Leu Gln Lys Thr Arg Gly Pro Val Asn Leu Asn Lys
1345             1350             1355             1360

gta aat aga cct gga agg act ccc tcc aag ctt ctg ggt ccc ccg atg     4128
Val Asn Arg Pro Gly Arg Thr Pro Ser Lys Leu Leu Gly Pro Pro Met
            1365             1370             1375

ccc aaa gag tgg gaa tcc cta gag aag tca cca aaa agc aca gct ctc     4176
Pro Lys Glu Trp Glu Ser Leu Glu Lys Ser Pro Lys Ser Thr Ala Leu
            1380             1385             1390

agg acg aaa gac atc atc agt tta ccc ctg gac cgt cac gaa agc aat     4224
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